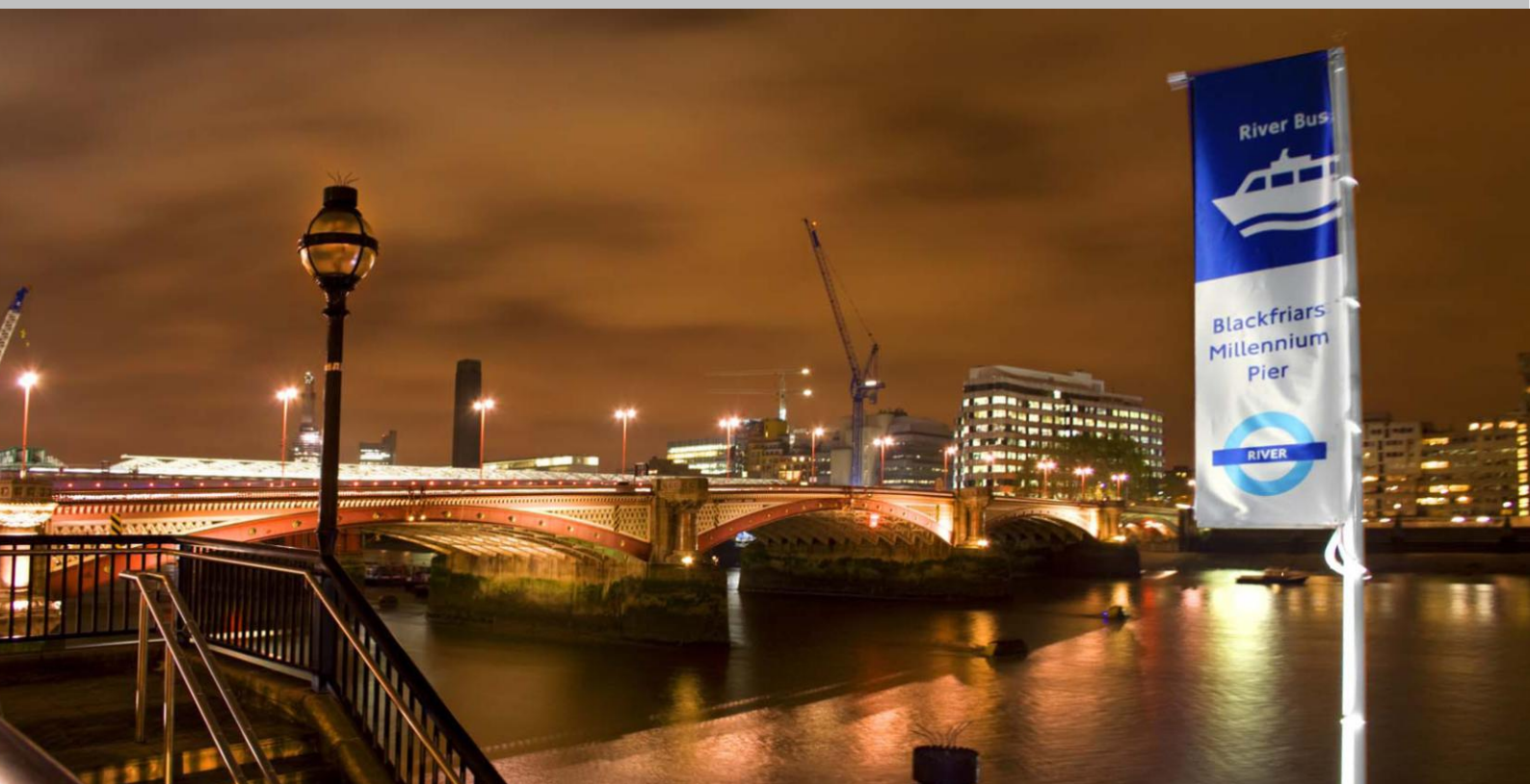


Mayor of London's
River Passenger Service Concordat

Action Plan for Reducing Emissions to Air

2011 - 2014

Environment Workstream



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1. INTRODUCTION

This document represents the Action Plan of the organisations participating in the Mayor of London's River Passenger Services Concordat Environment Workstream. These organisations are: Transport for London (TfL); Serco (Woolwich Ferry operator); City Cruises; Bateaux London, Thames Clippers and the Passenger Boat Association.

The aim of the document is to set out the context for environmental improvements which are relevant to river boat operations and the actions the participants have committed to undertake. The objective of the Action Plan is to reduce fuel and energy consumption from vessels, and therefore carbon dioxide emissions, as well as air pollutants which can cause a detrimental impact on air quality.

The Action Plan will be reviewed at regular intervals so that progress can be measured and any adjustments due to changes in circumstance or ambition can be recorded in future updates.

2. ACTION PLAN CONTEXT

2.1 Introduction

This section of the Action Plan provides information on the context and contribution of river boats to CO2 emissions and air pollution in London. Issues surrounding the implementation of the Action Plan and the reasons why the Action Plan has been focussed in its current format and scope are also discussed.

2.2 Background

In April 2009 a 'River Passenger Services Concordat' was announced by the Mayor of London in response to the need to develop London's river passenger services to their full potential. The Concordat Group is made up of the Greater London Authority (GLA), the London Development Agency (LDA), the borough councils, the Port of London Authority (PLA), TfL, boat operators, pier owners and other stakeholders.

The Concordat commits the various partners to improving ticketing, piers, passenger information, and to improving the integration of river services with the wider transport network.

The centrepiece of the Concordat is the Rivers Action Plan, which sets out the issues that need to be addressed. The aims of the Rivers Action Plan will be achieved through individual workstreams. The Environment Workstream aims to identify options for reducing the negative environmental impacts of river transport. In particular, the control of air pollutant emissions from vessels was identified as one of the priorities of the Environment Workstream.

2.3 Impact of river boats on air quality

The control of air pollutant emissions from vessels was identified as one of the priorities of the Environment Workstream due to the overall contribution to TfL's emissions and therefore to London's transport emissions.

The contribution that emissions from river boat services make to TfL and London's transport emissions are shown in table 2.1.

Table 2.1 Thames river passenger services contribution to emissions

Pollutant	Contribution to TfL emissions (2008/9)	Contribution to transport emissions in Inner London	Contribution to transport emissions in Greater London
Particulates	7.6%	2.0%	0.6%
Oxides of nitrogen	3.2%	3.0%	0.8%
Sulphur dioxide	1.0%	3.5%	0.8%
Carbon dioxide	0.8%	Data unavailable	0.2%

Notes:

1. Contribution to TfL emissions figures are from the 2010 TRL report Reducing Emissions From Thames River Passenger Services in London.
2. TfL emissions are reported in TfL's environment report 2010
3. London transport emissions are from the London Atmospheric Emissions Inventory 2008
4. The Inner London boundary largely follows that of the north/south circular

As river boat services are not currently included in the London Atmospheric Emissions Inventory (LAEI), the figures in the table above have been generated by the addition of the river boat services emissions, as calculated by the Environment Workstream, to the total transport emissions for Inner London and Greater London from the LAEI.

River boat services contribute less than 4% of transport emissions in Inner London and less than 1% of transport emissions in Greater London. This is not surprising given that emissions from river boat services are only generated along the river corridor and other transport sources are widespread. As river boat services are not currently included in the LAEI, it is difficult to look at the contribution of river boat services at a more local level, such as areas adjacent to the river, but the likelihood is that it could be high. The impact that these emissions might have on air quality and public exposure is however reduced due to the fact that emissions will have partially dispersed prior to reaching members of the public on land.

2.4 Existing measures to reduce emissions

All of the operators involved in the Environment Workstream have already taken some steps to reduce emissions from their operations or were in the process of evaluating options at the time the workstream was established. Below is a summary of the initiatives that have been introduced to date.

Thames Clippers:

- Vessels have operated on ultra low sulphur diesel since October 2008
- Vessels are refuelled daily with sufficient fuel for the day to avoid operation with heavy tanks (thereby avoiding increased fuel consumption)
- Engines are governed to limit the top speed of the vessel to 29 knots
- Engine injectors have been upgraded to reduce NOx emissions

- Captains undergo high speed craft type rating training every two years which includes maximising fuel efficiency of operation
- Captains switch engines off between service runs
- When vessels are moored, they are plugged into a shore mains supply rather than using the on-board generator

City Cruises:

- Introduced a comprehensive maintenance programme to ensure that all engines work at optimum efficiency and faults and repairs are reduced. This involves service/oil-change every 500 hours (approx. 6 weeks)
- Installation of LED down lighters in saloon of one vessel
- Installation of photo-voltaic panels on roof of one vessel which could provide sufficient power to run most auxiliary systems

Bateaux London:

- Vessels use a shore mains supply when moored (although this is not sufficient for kitchen requirements which still require power from the auxiliary engines)
- One vessel is double glazed and glass is fitted with heat reflective film to help reduce air conditioning

Woolwich Ferry:

- Investigating the use of fuel additives to reduce emissions
- Investigating the cost and operational issues associated with switching to ULSD to reduce sulphur dioxide emissions
- Investigating the cost and operational issues associated with fitting exhaust aftertreatment systems such as diesel particulate filters (DPFs) and selective catalytic converters (SCR) to reduce PM10 and NOx emissions respectively

2.5 Review of options to reduce emissions

The vessels on the Thames vary considerably in terms of their characteristics and operational duty. Furthermore, some emission-reduction options would be relevant to some vessels and not to others, and to some engines and not others. It is necessary to take a bespoke approach to each of the main operators, although sharing experience and best practice is key to making the most effective use of available fuel and emission reduction techniques. These issues were investigated and documented in an earlier report for TfL by Transport Research Laboratory (TRL)¹.

2.6 Implementation focus

The operators who are members of the Environment Workstream are responsible for most of the passenger transport on the Thames in London. It is therefore sensible to focus on these operators, while using the influence of TfL to stimulate action by the smaller operators where possible.

¹ Reducing emissions from Thames river passenger services in London, TRL CPR765 (2010)

Some emission-reduction options could have small benefits for emissions at relatively low-cost, including eco-driving training, reducing/governing engine speed, fuel monitoring for vessels and captains, low-energy appliances to reduce auxiliary power requirements, fuel additives (although the effectiveness needs to be proven) and preventative maintenance. Some options which will have a moderate effect on emissions at intermediate cost, such as wet exhaust systems (although most boats already have them) and scrubbers. Some options are relatively expensive but will have a substantial impact on emissions, such as DPFs and SCR.

Detailed consideration of the options, and recommendations on cost effectiveness on an operator by operator basis was carried out by an earlier study by TRL and the report provided to the Environment Workstream members. This report has informed the decision making of TfL and the main operators who have jointly developed this action plan.

The main operators and TfL have each selected a number of actions to progress during the life of the Action Plan, and these are set out in section 3.

2.7 *Timeframe*

The timeframe for implementation of the Action Plan is from 2011 to 2014. Four years was considered an appropriate timeframe for development of this Action Plan as during this timescale there is a good degree of confidence as to the availability of different fuels and technologies that can deliver environmental benefits. Furthermore, some of the actions assigned to the operators cannot be implemented until certain longer term decisions are taken, such as the procurement of new vessels.

3. AGREED ACTIONS

This section sets out the actions agreed by each of the River Concordat Members, with a description of:

- Organisation
- Responsible person
- Description of action
- Timescales
- Success criteria

3.1 TfL and Woolwich Ferry Actions

ACTION	RESPONSIBLE	COMPLETION	SUCCESS CRITERIA
T.1 Investigate external funding opportunities to convert river boats to cleaner fuels or fit emission reduction technology	A Rickard	July 2011	EU and UK sources investigated and identified and communicated to Concordat Environment sub group
T.2 Produce a briefing note on eco-driving and distribute to Thames operators.	A Rickard	October 2011	One page guidance note completed and distributed to 50 Operators in conjunction with the Passenger Boat Association
T.3 Encourage operators to introduce measures that will reduce emissions through negotiation and licence renewal as and when opportunities arise	A Griffiths	April 2012	Environmental improvements included as part of licence renewals
T.4. Convert all three ferries to Ultra Low Sulphur Diesel to eliminate SO2 and reduce PM emissions by 10%	D Dutton	September 2011	All three vessels in operation using ultra low sulphur fuel by September 2011

ACTION	RESPONSIBLE	COMPLETION	SUCCESS CRITERIA
T.5 Fit diesel particulate filters to all three ferries to reduce PM emissions by 90% (subject to satisfactory performance of system fitted to one vessel for three months)	D Dutton	- one vessel by March 2012 - two remaining vessels by March 2013	All filter systems fitted and the vessels in operation by March 2013
T.6 Incorporate energy efficient lighting and renewable energy into the Tower Pier extension	A Griffiths	April 2012	Operation of extension is carbon neutral
T.7 Incorporate energy reduction measures where practicable in upgrade works to linkspan levelling and docking mechanism on Woolwich ferry terminals	A Griffiths	December 2012	Reduced energy consumption in operation

3.2 Thames Clipper Actions

ACTION	RESPONSIBLE	COMPLETION	SUCCESS CRITERIA
TC.1 Work in partnership with telematic system supplier to conduct trial of fuel monitoring equipment (which allows for monitoring of individual captains) and conduct analysis of fuel consumption of vessels over different duties	D Mann	December 2011	Telematics trial conducted on one vessel for minimum period of three months
TC.2 Provided trial successful under TC.1, improve monitoring of vessels and captains by rolling out fuel monitoring systems to 50% of newest fleet vessels	D Mann	April 2012	Fuel monitoring systems fitted to three vessels which would allow the performance of individual captains to be assessed
TC.3. Implement captain fuel monitoring programme to encourage 'eco-driving'	D Mann	July 2012	Captains ranked according to their fuel consumption and poor performers identified for additional training and rewards offered for good performers
TC.4 Ensure that fuel efficiency and low emissions is a key factor in the selection of future vessels purchased for the fleet.	D Mann	TBC but most likely 2013/14	New vessels to deliver improved fuel consumption, lower NOx and PM compared to current design

ACTION	RESPONSIBLE	COMPLETION	SUCCESS CRITERIA
TC.5 Investigate opportunities to trial and introduce new fuels and technologies that could deliver fuel and emission savings	D Mann	March 2012	Short report issued to TfL detailing the options reviewed and recommendations for those to be taken forward to implementation
TC.6 Develop plan to Implement measures recommended under action TC.5, provided viable option(s) are identified	D Mann	September 2012	Implementation plan for introduction of recommended fuels and technologies provided to TfL
TC.7 Work with the Classification Society to develop a domestic high speed code which will require environmental measures to be incorporated in the design of high speed river boat vessels	D Mann	Engagement with Classification Society to commence 2011 but outcome unlikely until post-2013	Production of a new high speed code which requires energy efficiency and other environmental considerations to be incorporated into the design of new vessels

3.3 City Cruises Actions

ACTION	RESPONSIBLE	COMPLETION	SUCCESS CRITERIA
CC.1 Upgrade Millennium fleet engines to latest specification resulting in improved fuel efficiency and lower emissions	P Wilson	-2 vessels during 2010/11 -2 vessels during 2011/12 -1 in 2012/13	Engines fitted and operational.
CC.2 Incorporation of fuel and energy efficiency measures as part of specification for new vessel (solar panels, wind turbine, efficient hull and propeller design, governed engines, fuel monitoring)	P Wilson	May 2012	New vessel operational, with range of energy and fuel efficiency measures in place.
CC.3 Stretching existing Millennium vessels in order to increase passenger capacity and improve fuel efficiency by 10%	P Wilson	To be defined, likely to be post March 2013 at rate of one vessel per year.	Four Millennium vessels modified with a 4 metre insert and in service by 2016.
CC.4 Improve energy efficiency of lighting on vessels	P Wilson	April 2011	All spot down-lighters replaced with LEDs.

ACTION	RESPONSIBLE	COMPLETION	SUCCESS CRITERIA
CC.5 Investigate governing engines on one Millennium vessel as means of reducing fuel consumption	P Wilson	May 2011	Govern engines on one vessel and trial for period of six months.
CC.6 Govern engines on four remaining Millennium vessels if trial under CC.5 proves successful	P Wilson	March 2012	All four vessels in operation with governed engines
CC.7 Investigate trial of fuel monitoring system to allow monitoring of individual captains and encourage 'eco-driving'	P Wilson	Dec 2011	Fuel monitoring trial conducted on one vessel for minimum period of three months
CC.8 Fit fuel monitoring systems to five vessels to allow for monitoring of individual captains, subject to satisfactory trial under CC.7	P Wilson	April 2012	Fuel monitoring systems fitted to five vessels

3.4 Bateaux London Actions

ACTION	RESPONSIBLE	COMPLETION	SUCCESS CRITERIA
BL.1 Replace engines with latest specification resulting in improved fuel efficiency and lower emissions	M Wilson	- 1 by July 2011 - 4 by end March 2012	Engines fitted and operational by timescales specified.
BL.2 Improve energy efficiency of lighting in vessels	M Wilson	April 2011	LED lighting fitted to all small down-lighters.